

FRYER
MACHINE SYSTEMS

The Toolroom Company

TOOLROOM TURNING



DESIGNED, ENGINEERED
& ASSEMBLED IN USA

ET-TR SERIES

High Precision Toolroom Turning

FRYER ET-TR SERIES



ET-16

**16" Swing
Center Distance 40" (60")
Spindle Bore 2.05"**

ADVANCED TOOLROOM LATHES FOR SMALL BATCH MACHINING



ET-18

18" Swing

Center Distance 40" (60")

Spindle Bore 2.05" (3.40")



DESIGNED, ENGINEERED
& ASSEMBLED IN USA

FRYER ET-TR SERIES



ET-21

21" Swing
Center Distance 60" (40", 80", 120")
Spindle Bore 3.40" (4.01")



ADVANCED TOOLROOM LATHES FOR SMALL BATCH MACHINING



ET-25

25" Swing

Center Distance 60" (40", 80", 120")

Spindle Bore 3.40" (4.01")

INSIDE THE ET-TR

HEADSTOCK

Heavy duty headstock features an auto-shift gear box that provides high torque and high speed. All gears are balanced for smooth high speed operation.

DRY SUMP

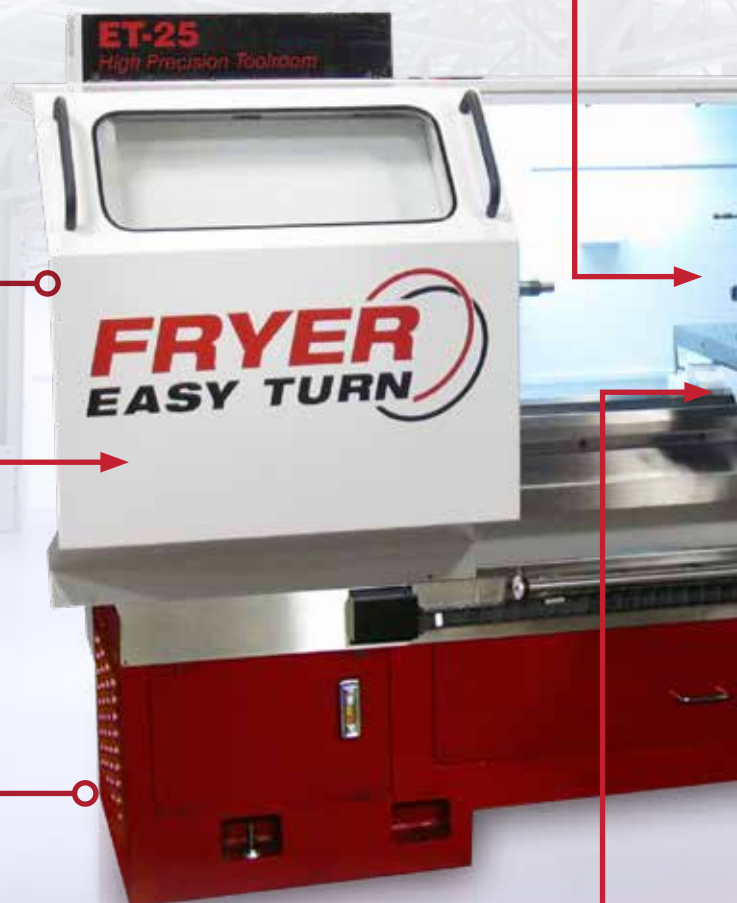
A dry sump lubrication system is standard on all ET lathes. It features a separate oil tank that is located away from the headstock to keep the oil cool.

ONE PIECE BASE

The ET series features a rugged one piece base casting for added rigidity. Made from thermally stable Meehanite cast iron, it also contains coolant and chips with the integrated chip pan and flood coolant reservoir.

TOOL POST OR 8 STATION TURRET

Simple tool changing to meet your needs. Manual use or automatic.



CROSS SLIDE AND CARRIAGE

Features hand scraped Turcite B on all friction surfaces including gibs. Metered oil system delivers precise lubrication and features a low lube alarm.

WHY WE'RE BUILT BETTER

FRYER / SIEMENS 828-HS CONTROL

The ultimate toolroom CNC. Easy to use for single piece production but includes features unmatched by any other builder. Regenerative drives save you over 40% on electricity.

ABSOLUTE ENCODERS

Remembers your position with the power off. All fixture offsets and tool offsets are maintained so you don't have to re-indicate parts like on other controls.

TAILSTOCK

High quality manual tailstock features a precision honed body, chrome plated quill, quill lock and graduated dial.

PRECISION GROUND C3 GRADE DOUBLE NUT BALLSCREWS

Provides incredible 0.0002" accuracy for your most demanding jobs.

BED WAYS

The extra wide bed is constructed from FC-30 Meehanite cast iron. It features extra ribbing that increases rigidity. Way surfaces are induction hardened to RC-50 and precision ground.

MANUAL OPERATION



MANUAL HANDLES

Manual handles are provided for both the table and saddle with full digital readout (DRO) of position. No CNC experience is needed to use the manual handles.

ELECTRONIC STOPS

Allows you to set a stop position for any axis. Crank the handles and you can't move past the stop position.

TAPERS AND CHAMFERS

Set the angle required and by turning one handle both axis move at the desired angle.

FINE/COARSE SWITCH

Allows you to easily switch between fast or slow movement of the handles or joy stick.

4 POSITION JOYSTICK

Simple joystick feed control allows positioning of the axes with a steady feedrate. The feedrate is adjustable with either the coarse/fine switch or the feedrate override knob.

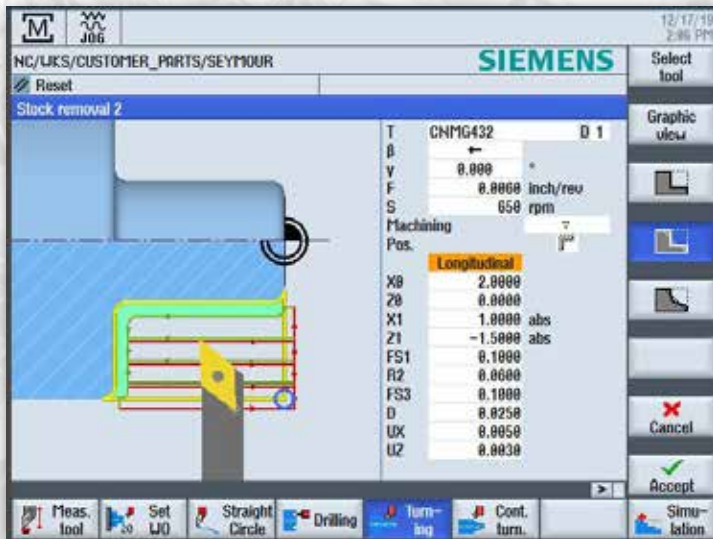
OTHER MANUAL FEATURES

- Manually run spindle in either RPM or Constant Surface Speed.
- One button tool selection for easy tool changes.
- Teach mode

NO CNC EXPERIENCE NEEDED

DO ONE CYCLES

The Do One cycles allow you to quickly drill, bore or tap holes automatically by filling out a simple screen. Once the operation is completed the machines returns to manual mode. Includes simple turning, threading, thread repair, drilling, tapping and boring cycles.

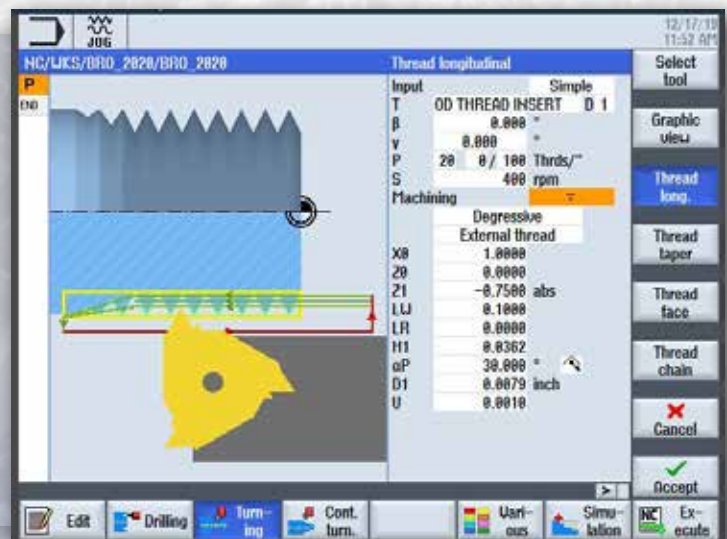


SIMPLE TURNING

You just need to make one simple turned part so why write an entire program? In Manual Mode all turning cycles are available to run by themselves with no program required. You choose your tool, speeds and feeds, depth of cut and the cycle does the rest.

THREADING

This operation becomes a simple fill in one box procedure. The thread cycle can run by itself in Manual Mode without having to write an entire program. Tapered, external/internal threads, inch/metric, right hand/left hand threads are all there in the same do-one cycle. The threading cycle also does thread repair with another click of a button.

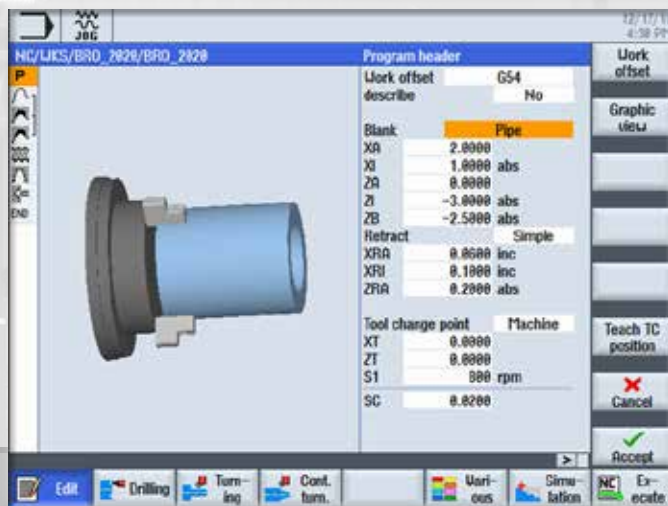
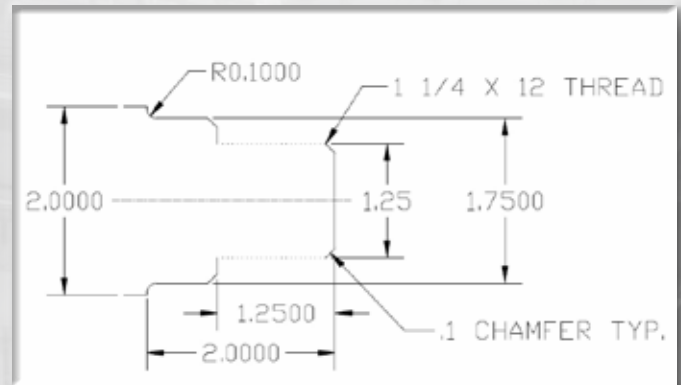


FRYER

PROGRAMMING

PART PRINT

Programming in ShopTurn on the Fryer / Siemens 828-HS control is straight forward with no need for G codes. Enter dimensions directly off the print.

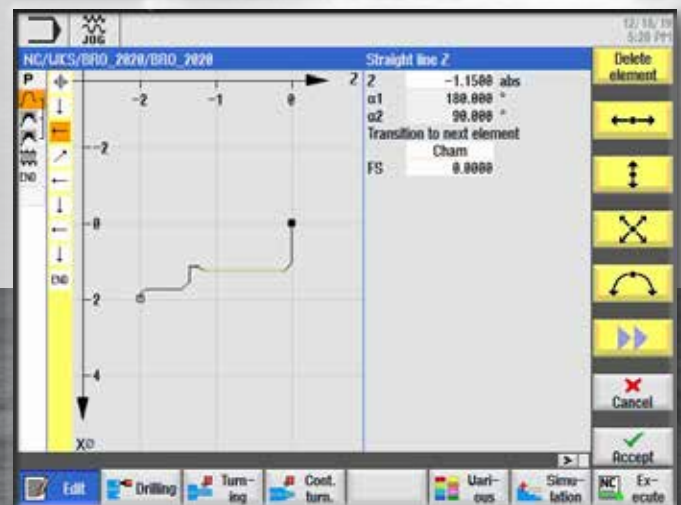


PROGRAM HEADER

Enter information about the diameter, length and shape of your blank and where you want to make tool changes

CONTOUR EDITOR

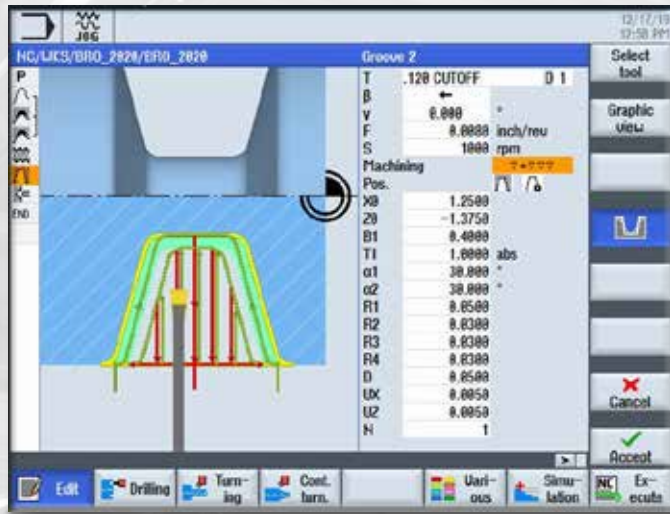
This feature lets you create a tool path with finished dimensions right from your print. Enter the numbers and the path generates visually as you go along.



MACHINE THE CONTOUR

This cycle connects to the tool path you created in the Contour Editor. Here you enter the tool, speeds and feeds, depth of cut and direction. An interrupted cut feature lets you break stringy chips during roughing.

FROM DRAWING TO FINISHED PART



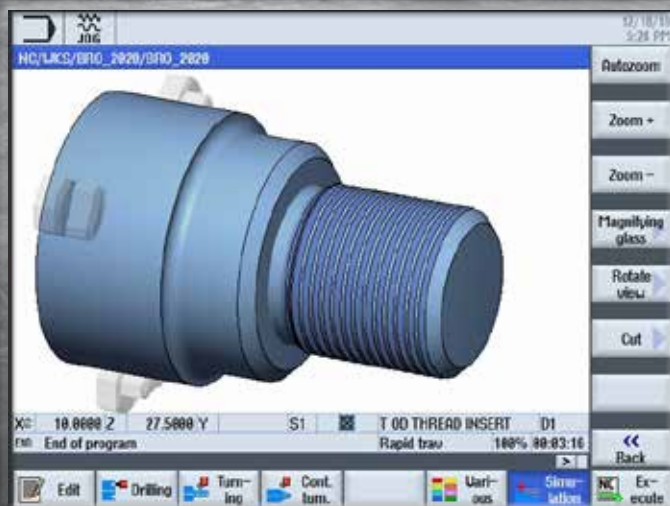
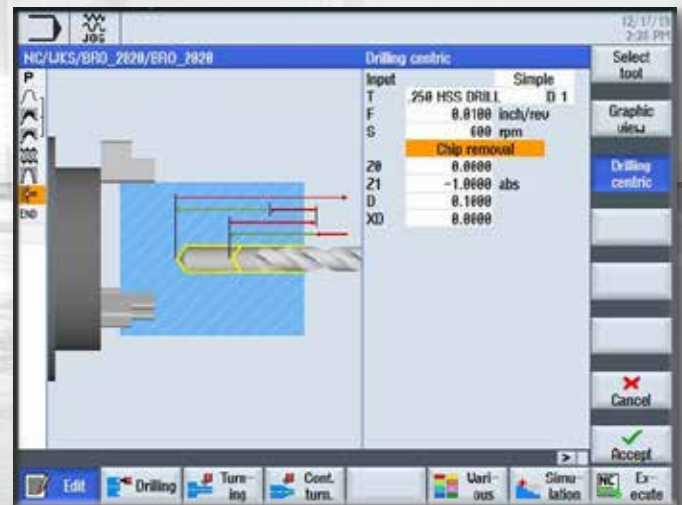
GROOVING CYCLE

Any type of groove can be easily created with just a few keystrokes. V grooves with different wall angles and a radius at the bottom? No problem. Cycles can be switched to face or internal grooving with one key. Want multiples? Easy as adding how many and the spacing.

DRILLING CYCLE

Manual drilling from the tailstock is standard but maybe you have a lot of parts to make. Drill and tapping cycles make it automatic.

A time saving feature of the 828-HS is that it remembers all your previous values in any cycle. Open a cycle you used weeks ago and there are your last values. Now you only need to change one or two instead of starting over with empty boxes.

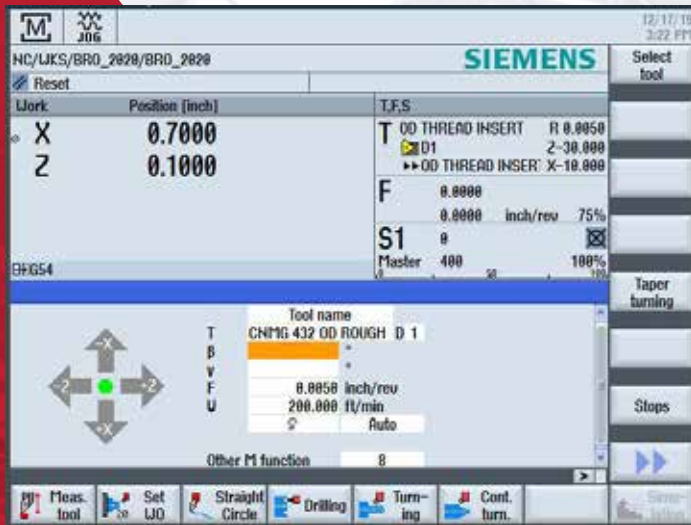


SIMULATION MODE

Before making any chips the full featured simulation mode lets you see the part in 3D to check if everything is correct compared to the print. Part can be rotated, zoomed and cut to see into different areas of the part. Groove in the wrong place? Fix it before you actually machine it. Simulation even shows cycle time.

FRYER

SETUP AND OPERATION



MANUAL SCREEN

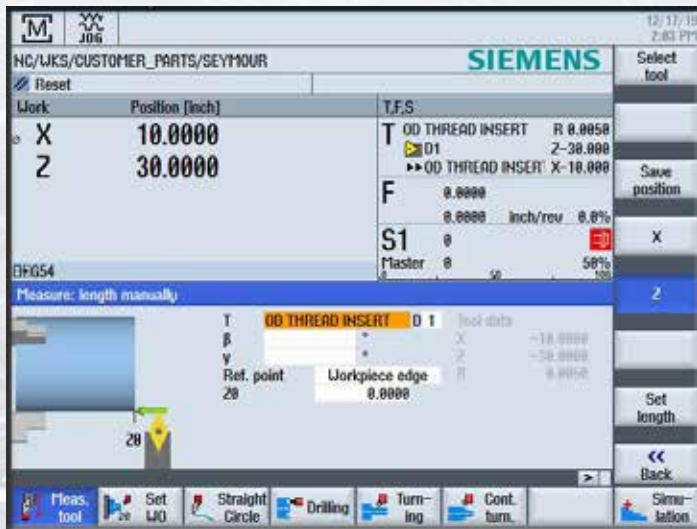
All of your basic set-up operations begin here. You can call up tools, set part zeros and operate the machine manually. Want to turn on the spindle and drill a hole or face off a part with the electronic handwheels? Here's where it all starts.

TOOL TABLE

Graphic display shows the type and name of tools. When you create a 55 degree insert it looks exactly like the tool. You can also control spindle direction and coolant. Tool life monitoring is also standard for time in cut or part count. Tool library has space for 250 tools with multiple edges available.

Tool list											turret	Tool measure
Loc.	MT LO.	Type	Tool name	D	Length Z	Radius		Pl. leng			1	
1			CNMG 432 OD ROUGH	1	-30.0000	0.0315	← 95.0	55	0.4	✓		
2			OD FINISH 1	1	-20.0000	0.0150	← 93.0	35	0.4	✓		
3			OD THREAD INSERT	1	-30.0000	0.0050			0.5	✓		
4			.120 CUTOFF	1	-30.0000	0.0010	0.1200		0.5	✓		Edges
5			.375 DRILL	1	-20.0000	0.3750	118.0			✓		
6			BORING BAR	1	-30.0000	0.0150				✓		
7			1.5MM TAP	1	0.0000	0.2500	16.930			✓		
8			PLUNGE CUTTER	1	-20.0000	0.0150	0.1200		0.4	✓		
			.250 HSS DRILL	1	-20.0000	0.2500	118.0			✓		Unload
			.393 DRILL	1	-20.0000	0.3930	118.0			✓		
			1.0 DRILL	1	-30.0000	1.0000	118.0			✓		
			BORING BAR	1	-30.0000	0.0150	← 95.0	55	0.4	✓		Delete tool
			DNMG431	1	-30.0000	0.0150	→ 95.0	35	0.4	✓		
			ROUGHING_TOOL	1	-30.0000	0.0310	← 95.0	80	0.5	✓		Magazine selection
			CBD OD ROUGH	1	-30.0000	0.0315	← 93.0	55	0.4	✓		
			OD CBD ROUGH 6	1	0.0000	0.0315	← 95.0	55	0.4	✓		
			OD ROUGH 5	1	0.0000	0.0315	← 95.0	55	0.4	✓		

FASTER, SIMPLER & MORE PRODUCTIVE

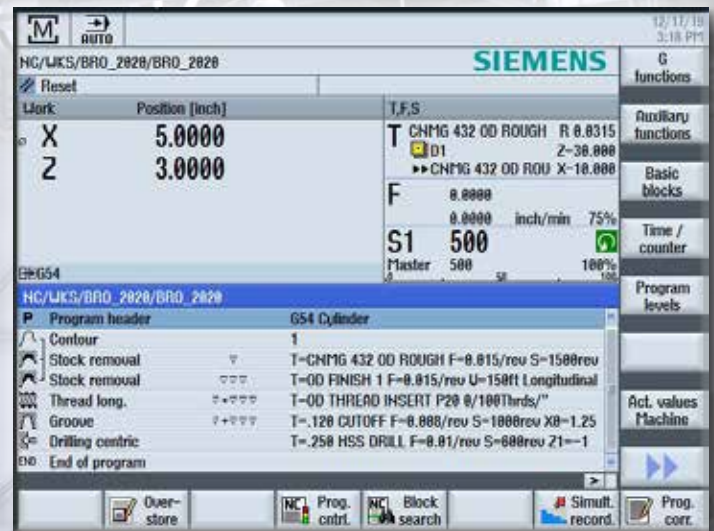


MEASURE TOOL

Touch off the tool on the part or chuck to set your X and Z lengths. Then use one of 99 work offsets to set your part Zero. All offsets are automatically saved.

AUTO SCREEN

After the program is proved out in simulation you are ready to run. The Auto screen Block Search function lets you start anywhere in the program. Part counters and run times are also included.



HANDWHEEL RUN

This feature allows you to control your program execution with the electronic handwheel. Turning the handwheel causes the program to run with you in charge of the axis feed. Turn it slow or speed things up by cranking faster. When you stop turning the axes stop moving, turn the handle the opposite direction and the axes move backwards though the program. Designed to make proving-out programs easier with safety and confidence. (optional)



Allows you
convert to

EACH

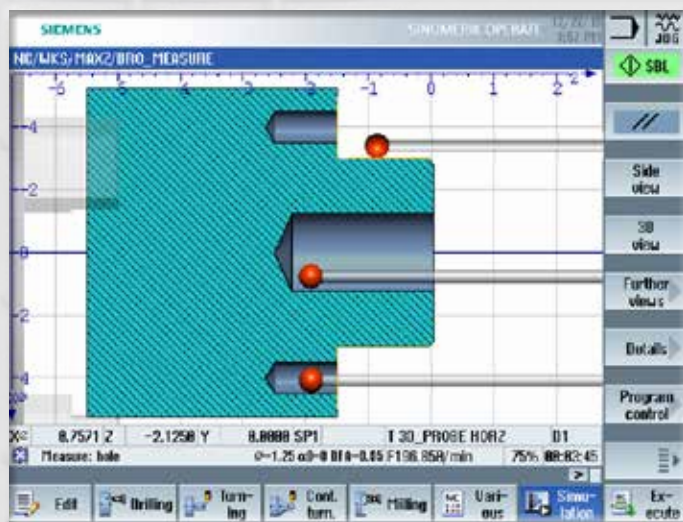


Live tool part programming in C axis is simple with the canned cycles helping you fill in information. Tell the cycle what diameter you want to work on and it will wrap the cycle around the diameter or work on the front of the part to create pockets, keyways, drilling, engraving etc.



IN-PROCESS PART PROBE MEASUREMENT CYCLES

This feature allows you to measure part features during program execution. Can also be used in MDI mode after cutting the part to then measure certain features and display the measurement.



SIEMENS OFFLINE PROGRAMMING SOFTWARE

Easy-to-use software package that installs on a standard desktop PC and duplicates the control functions. Allows full programming and part program verification.



OTHER AVAILABLE CONTROL OPTIONS

EXTENDED OPERATOR FUNCTIONS

Includes an automatic teach function to save positions to an MDI program, the ability to save tool data and tool offset data, save MDI programs and other features.

HIGH SPEED NETWORK INTERFACE

High speed Ethernet port is the ideal way to connect your machine to your LAN (local area network). Features 10/100 MB/s bandwidth for fast uploads and downloads of part programs. Also features a drip feed option that allows you to run part programs larger than the memory of the machine.

REMOTE MONITORING

Allows monitoring of the CNC from any remote location where internet access is available. Check cycle times, spindle load, feedrate override position, program being run and more.

MACHINE OPTIONS



DORIAN MANUAL TOOL POST

Quick change Dorian manual tool post is the perfect way to hold your cutting tools. Package includes 5-piece holder set, riser block, coolant port and installation.

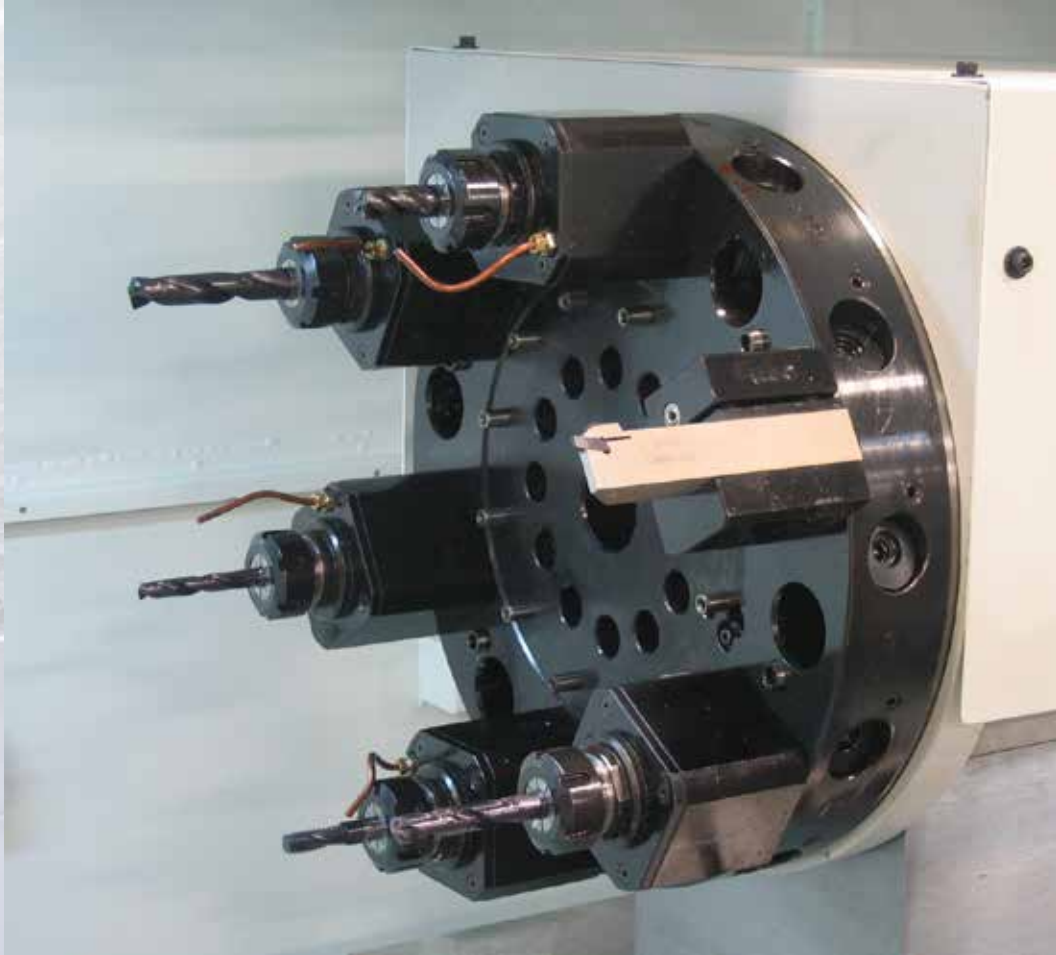
4 POSITION ELECTRONIC TOOL POST

The electronic 4 position tool post automatically indexes to the next tool. This unit holds standard 1" tooling and is available for the ET-18, 21 and 25. Can be indexed manually with 'next tool' button or automatically with program control.



LIVE TOOL TURRET

The Live Tool Turret package includes a 10 HP live tool spindle motor with rigid tap and a surface transformation feature. This feature provides full milling cycles such as pocketing and contouring to be easily programmed using the conversational menus. Also includes a 12 position option.

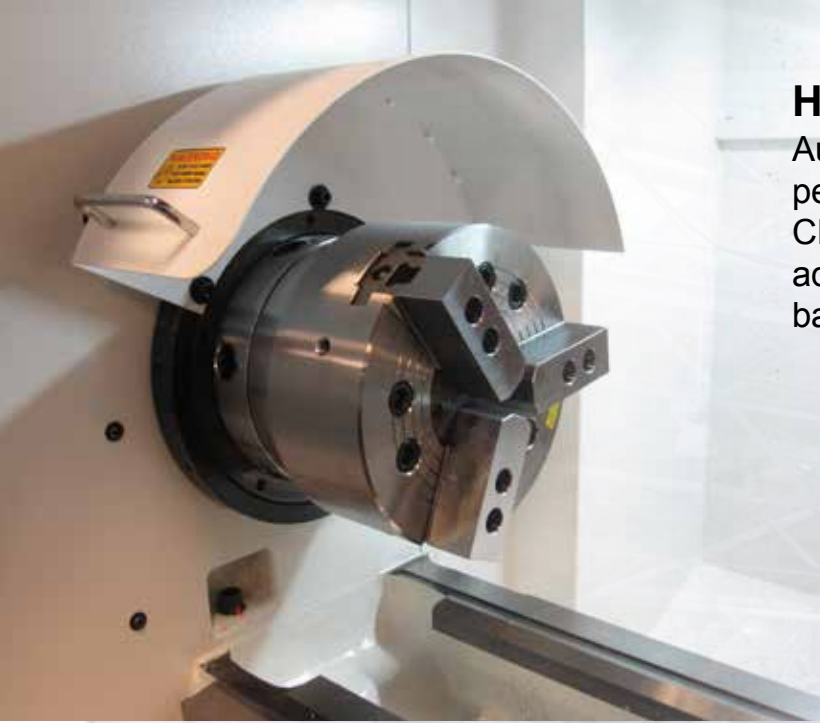


8 STATION TURRET

Automatic 8 tool turret features standard stick tooling, coolant thru the turret and comes with 3 ID tool blocks. Can be indexed manually with 'next tool' button or automatically with program. Also includes a 12 position option.

FRYER

MACHINE OPTIONS



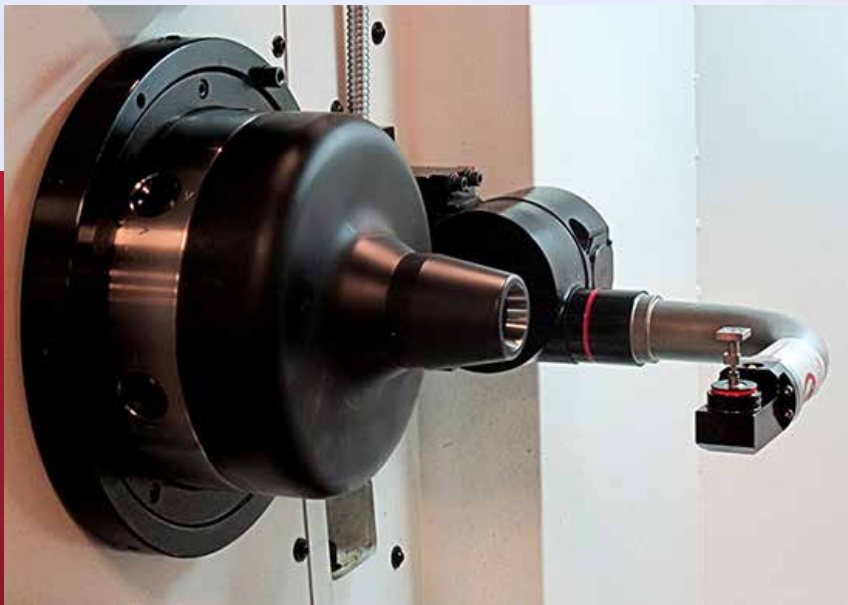
HYDRAULIC CHUCK

Automatic hydraulic chuck is foot pedal operated or by M code in CNC. Strong hydraulic pressure is adjustable for thin tubing to heavy bar work.



5C PNEUMATIC COLLET CHUCK

Air actuated collet adapter mounts directly to spindle. Includes a safety foot pedal to open and close collet. Can also be controlled with M codes or pushbuttons on the control console.



AUTOMATIC TOOL SETTER

Automatic tool setter makes set-up fast and easy. Motorized arm swings down from parked position to and then automatically sets the X and Z offset.

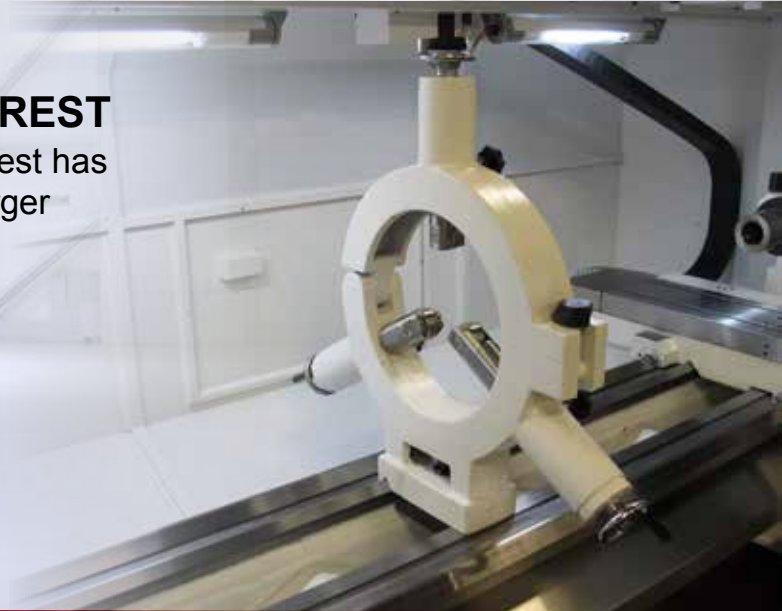


HYDRAULIC STEADY/ FOLLOW RESTS

Hydraulically actuated grippers can be configured into programmable steady rests or follow rests. Great for long shafts with smaller diameters as the part is supported across from the tool the entire length of the cut. Opens and closes with foot pedal or M Code.

ROLLER STEADY REST

Clam shell type steady rest has a range of .5" – 7.5". Larger sizes available.

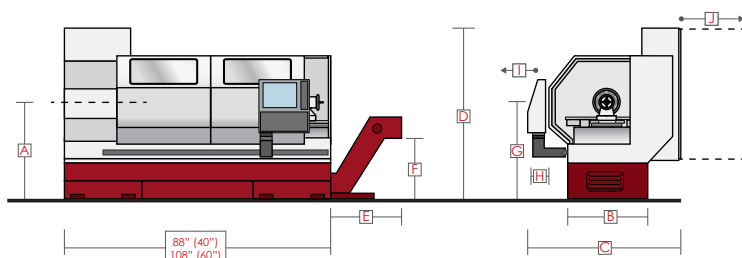


CHIP CONVEYOR

Chip Conveyors available for all bed lengths. Conveyor runs the length of the bed and exits at a standard height into a chip cart or drum.

FRYER

ET-TR SERIES SPECIFICATIONS		ET-16		ET-18		ET-21		ET-25	
MACHINE CAPACITY	Swing Over Bed	16"		18"		21"		25"	
	Swing Over Cross Slide	8.125"		9.125"		12"		16"	
	Center Height	8.125"		9.125"		10.5"		12.6"	
	Swing in Gap	N/A		N/A		N/A		N/A	
	Distance Between Centers	40" (60")		40" (60")		60" (40", 80", 120")		60" (40", 80", 120")	
	Width of Bed	14"		14"		14"		14"	
	Width of Cross Slide	8.5"		8.5"		8.5"		8.5"	
	Cross Slide Travel (X)	10"		10"		12"		12.5"	
	Longitudinal Travel (Z)	37"		37"		57"		57"	
	Optional Travel (Z)	57"		57"		37", 77", 117"		37", 77", 117"	
	Ball Screw Size	1.625" Z - 1.00" X		1.625" Z - 1.00" X		1.625" Z - 1.00" X		1.625" Z - 1.00" X	
	Max Part Weight - Unsupported	500 lbs		500 lbs		800 lbs		800 lbs	
	Max Part Weight - Supported w/ S/R	1,500 lbs		2,500 lbs		3,000 lbs		3,000 lbs	
SPINDLE	Spindle Nose	Camlock D1-6		Camlock D1-6 (D1-8)		Camlock D1-8 (A2-11)		Camlock D1-8 (A2-11)	
	Spindle Bore	2.05"		2.05" (3.4")		3.40" (4.01")		3.40" (4.01")	
	Spindle Nose Taper	MT - 6		MT - 6		Straight		Straight	
	Spindle Motor HP (Peak)	10 HP		10 HP		15 HP		15 HP	
	Spindle Speed (RPM)	100 - 3,000		50 - 2,500		50 - 2,000 (1,500)		50 - 2,000 (1,500)	
	Speed Ranges			Low 50 - 350		Low 50 - 300		Low 50 - 300	
		High	100 - 3,000	High	350 - 2,500	High	300 - 2,000 (1,500)	High	300 - 2,000 (1,500)
	Speed Selection	Single Gear Range		Auto Shift		Auto Shift		Auto Shift	
TAILSTOCK	Quill Travel	5.0"		5.0"		5.5"		5.5"	
	Quill Diameter	2.5"		2.5"		2.5"		2.5"	
	Quill Taper Hole	MT-5		MT-5		MT-5		MT-5	
PERFORMANCE	Positioning Accuracy			+/- 0.0002"		+/- 0.0002"		+/- 0.0002"	
	Positioning Repeatability			+/- 0.0001"		+/- 0.0001"		+/- 0.0001"	
	Rapid Traverse (X,Z)			400 IPM		400 IPM		400 IPM	
	Servo Type			AC Digital Brushless		AC Digital Brushless		AC Digital Brushless	
	Axis Thrust (Peak)			3,058 lbs. X 3,504 lbs. Z		3,058 lbs. X 3,504 lbs. Z		3,058 lbs. X 3,504 lbs. Z	
GENERAL INFO	Air Requirements			90 PSI - 5 CFM		90 PSI - 5 CFM		90 PSI - 5 CFM	
	Coolant Capacity			10 Gallons		10 Gallons		10 Gallons	
	Coolant Flow			2 GPM		2 GPM		2 GPM	
	Power Requirements			40 AMP		40 AMP		40 AMP	
	Voltage Requirements			208-240 VAC 3 PHASE (380-500 VAC Optional)		208-240 VAC 3 PHASE (380-500 VAC Optional)		208-240 VAC 3 PHASE (380-500 VAC Optional)	
	Shipping Dimensions* (WxDxH)	86"x72"x68"		86"x72"x68"		106"x76"x68"		106"x76"x68"	
	Operating Dimensions (WxDxH)	86"x74"x68"		86"x74"x68"		106"x78"x68"		106"x78"x68"	
	Machine Weight	5,000 lbs.		6,500 lbs.		7,500 lbs.		8,500 lbs.	



	ET-16	ET-18	ET-21	ET-25
Floor to Spindle Center (A)	44"	44"	45.5"	47.5"
Floor Depth (B)	27"	27"	27"	27"
Overall Depth (C)	74"	74"	78"	78"
Maximum Height (D)	68"	68"	68"	68"
Conveyor Protrusion (E)	30"	30"	30"	30"
Conveyor Height (F)	28"	28"	28"	28"
Floor to Console Height (G)	42.5"	42.5"	42.5"	42.5"
Console Depth (H)	9.5"	9.5"	9.5"	9.5"
Console Swing Radius (I)	16"	16"	16"	16"
Electrical Cabinet Swing Radius (J)	27"	27"	27"	27"